PROCEEDINGS OF THE

ROYAL ENTOMOLOGICAL SOCIETY

OF LONDON

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ORDINARY MEETING

WEDNESDAY, 1st APRIL, 1959, at 5.30 p.m.

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 4th March, 1959.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 8].
6. Admission of Fellows.
7. Exhibits.
8. Communications.

Dr. E. J. Popham

The respiration of Corixidae.

[ABSTRACT]

The respiration of Corixidae is of general interest because it is one of the few families of insects in which all stages of the life cycle are aquatic and because a greater degree of emancipation from the surface is shown than in almost any other family of Hemiptera.

Their ecological success is due to the specialised form of the tracheal system which on the one hand emancipates the insects from the surface so that they can undergo adaptive radiation to bottom habitats, and on the other provides an efficient thoracic ventilation for flight from one habitat to another.

An account will be given of the way in which the immature and adult stages compensate for the reduction in the efficiency of the skin as a respiratory organ by using gas bubbles on the surface as a physical gill. The efficiency of this is increased by a modification of the tracheal system restricting gaseous exchange mainly to the thoracic region, where the longitudinal tracheal trunks are much more highly developed than in the abdominal region.

An account of the phenomenon and causes of surfacing will be discussed, including the function of Hagemann's organ.

The use of the gill has resulted in certain adaptations of the hind legs, particularly the coxae, and of the male abdomen, to compensate any tendency for the insect to float to the surface and to enable the gas stores to be replenished laterally during copulation.

TEA will be served in the Library before the meeting.

NOTICES

The next meeting will be held on Wednesday, 6*th May*, 1959 :

Dr. R. C. Rainey and **Mr. L. R. Taylor.**—Air currents and the behaviour of air-borne insects : aphids and locusts.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 4TH MARCH, 1959
Dr. B. P. UVAROV, C.M.G., F.R.S., President, in the Chair.

Present, 108 Fellows and 32 Visitors.

The minutes of the Ordinary Meeting held on 21st January were confirmed and signed by the President.

The President announced that he had nominated Dr. J. S. Kennedy, Dr. A. M. Massee and Mr. E. O. Pearson as his Vice-Presidents for the coming year.

The names of the following candidates for election were read for the first time : Mr. Michael Antony Cornes ; Mr. Joseph Firmin ; Dr. Charles Joseph Goodall ; Mr. William Ronald Kellett ; Mr. William Percy Langridge ; Mr. Peter Henry Langton ; Mr. William Ivan St. George Light ; Mr. Keith Kerr Reid ; and Miss Janina H. B. Schlesinger, B.Sc., A.R.C.S.

For the second time (taken as read) : Mr. Zaven Stephen Ariyan, B.Sc. ; Dr. Huai C. Chiang ; Mr. Philip John Clare Hawkins ; Mr. Guy Malcolm Spooner, M.B.E., M.A. ; Mr. Alexander John Wiley ; and Mr. Anthony Egerton Wright.

The Secretary read the names of the following newly elected Fellows of the Society : Dr. Elsie Collyer, The Grange, East Malling, Maidstone, Kent ; Mr. Donald Richard Dietlein, Imperial College Field Station, Silwood Park, Sunninghill, Berks. ; Miss Marion Gratwick, The Grange, East Malling, Maidstone, Kent ; Mr. Philip John Marsh Greenslade, Imperial College Field Station, Silwood Park, Sunninghill, Berks. ; M. Jacques Hamon, 82 Rue A. Briand, Orsay, Seine-et-Oise, France ; Miss Audrey D. Hancock, North Villa, Vale of Health, Hampstead, London, N.W.3 ; Mr. Joshua Hudson, 69 Milton Street, Wombwell, Nr. Barnsley, Yorks. ; Mr. Charles W. O'Brien, B.A., M.S., University of California, Berkeley 4, California, U.S.A. ; Mr. John Richard Parnell, 48 Bloomfield Drive, Odd Down, Bath ; Mr. Keith Eric Wellesley Salter, University of Sydney, New South Wales, Australia ; Mr. Herbert William Spencer, B.Sc., 27 Comeragh Road, London, W.14 ; Dr. John Hilton Sudd, The University, Hull, Yorks. ; and Mr. Jan Christopher Taylor, The Mu, Brook, Albury, Nr. Guildford, Surrey.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. D. Boocock, Mr. D. R. Dietlein, Mr. G. D. Heathcote, Dr. Chang Whan Kim, Mr. G. A. H. McClelland, Mr. J. R. Parnell, Mr. K. E. W. Salter, Dr. J. Simpson, Mr. J. C. Taylor and Dr. J. E. Treherne signed the Obligation Book and were admitted Fellows of the Society.

Professor V. B. Wigglesworth gave a paper on some histological studies on insects, an abstract of which appeared on page 1.

In the discussion which followed, Professor Wigglesworth said that in cutting the particular sections of chitin shown he had used an ordinary microtome blade ; in his view the secret of success lay less in the method of cutting than in the combined use of ester wax and agar for embedding. He continued, in

reply to an enquiry by Professor D. S. Bertram, that although he had tried using a glass knife he found a steel blade preferable.

Dr. P. T. Haskell having asked whether, in experiments with the whole head of *Rhodnius*, it had been necessary to inject agar into the head, Professor Wigglesworth said that his experiments on the whole head had not been satisfactory, as the embedding took a long time; it should, however, be possible to produce satisfactory results without injection if the head could be soaked for a sufficiently long time.

Mr. P. F. Mattingly gave a paper on the natural history of mosquito-borne diseases, an abstract of which appeared on page 2.

The discussion which followed was opened by a reference to the absence of yellow fever from India, in spite of the fact that *Aë. aegypti* was common. Mr. Mattingly agreed that no satisfactory explanation for this was yet forthcoming, but current theory suggested a cross immunity to yellow fever conferred by other related viruses occurring in the Far East.

Professor Bertram, in congratulating Mr. Mattingly, remarked that with the advent of contact insecticides attention which had formerly been concentrated on the larval stages was now focussed on the adults, and he thought there was danger in neglecting the early stages. In agreeing, Mr. Mattingly pointed out that a good deal of attention was still paid to breeding places and it was obviously desirable that the importance of both stages should be borne in mind. In the past economic considerations had limited activity to areas with a dense population.

Dr. J. R. Busvine said that the Sardinian campaign had involved both exophily on the part of the vector and the replacement of the latter in its breeding places by another species. Mr. Mattingly agreed that it was generally believed that final eradication of the vector had been prevented by the occurrence of exophilic forms.

Dr. T. H. C. Taylor asked what information was available on the present position in the use of *Megarhinus* in biological control. Mr. Mattingly replied that the older attempts made by Paine, who introduced *M. splendens* from Java into Fiji, had failed, probably because the species was not adapted to thick bush. More recent experiments had been made with *M. brevipalpis* in Hawaii, but little information was available on the results. Dr. K. Mellanby said that he was pessimistic regarding complete control by predatory larvae. In experiments he had made in Nigeria these predators seldom actively sought their prey, and fed mainly on larvae which bumped into them. It was possible for sluggish species (e.g. most *Anopheles*) to breed with few casualties in small vessels containing hungry predators.

Mr. P. G. Shute commented that the term "near-eradication" was to be preferred to "eradication" in malarial work. The World Health Organisation were now directing more attention to surveillance, following control measures, without which the malaria would return. He continued that the outbreak of malaria as far north as Archangel, which Mr. Mattingly had mentioned, was traced to mosquitoes breeding in buckets of water which were kept indoors (where the temperature was between 70° and 80°) during the period of intense winter cold, and which had transmitted the infection from persons infected while in the Caucasus. Mr. Shute added that house-spraying had been practised long before the war. Mr. Mattingly agreed but pointed out that the economic feasibility of such measures depended on the residual effects of the newer insecticides.

PAUL FREEMAN, *Honorary Secretary.*

Additions to the Library

Presented

Annual Review of Entomology. Edited by E. A. Steinhaus. Vol. 4. 8vo. Palo Alto, California : Annual Reviews Inc., 1959. [The Publishers.]

Ball, G. E. *A taxonomic study of the North American Licinini, with notes on the Old World species of the genus* Diplocheila *Brullé* (*Coleoptera*). 8vo. Philadelphia, 1959. [*Mem. Amer. ent. Soc.* **16**.] [American Entomological Society. By exchange.]

British Museum (Natural History). *Classification of the Aradidae* (*Hemiptera-Heteroptera*). By R. L. Usinger and R. Matsuda. 8vo. London, 1959. [Trustees of the British Museum.]

Chou, Io. [*Atlas of quarantine insects.*] 8vo. Peking, 1956.

—— [*History of entomological studies in China before the 20th century.*] 8vo. n.pl. 1957. (*English summary.*)

—— [*Text-book of entomology.*] 8vo. Peking, 1958. [The Author.]

Guide to the Insects of Connecticut. Pt. VI. *The Diptera or true flies.* Fasc. 6. *March flies and Gall-midges. Bibionidae,* by D. E. Hardy—*Itonididae* (*Cecidomyiidae*), by A. E. Pritchard and E. P. Felt (with revisions by C. L. and J. E. Remington.) 8vo. Hartford, Conn., 1958. [*Bull. Conn. geol. nat. Hist. Surv.* **87**.] [The Publishers.]

Klucze do oznaczania owadów Polski. 8vo. Warsaw.

23. Fam. XXIV. *Hymenoptera.* 55–56. *Chrysididae, Cleptidae :* J. Noskiewicz and W. Pulawski. 1958.

24. Fam. XIX. *Coleoptera.* 39–40. *Bostrychidae :* J. Dominik. 1958.

27. Fam. XXVIII. *Diptera.* 21. *Tabanidae :* P. Trojan. 1959.

[Polish Entomological Society.]

Kocher, L. *Catalogue commenté des Coléoptères du Maroc.* VIII. *Phytophages.* 8vo. Tanger, 1958. [*Trav. Inst. Sci. Chérifien* (*Zool.*) **19**.] [Société des sciences naturelles et physiques du Maroc.]

Rütimeyer, E., and Schütz, V. *Tropische Schmetterlinge.* Sm.8vo. Bern, 1947. [Dr. B. P. Uvarov.]

Zimmerman, E. C. *Insects of Hawaii.* Vol. 8. *Lepidoptera : Pyraloidea.* 8vo. Honolulu : Univ. Hawaii Pr., 1958. [The Publishers.]

Purchased

Barr, A. R. The Mosquitoes of Minnesota (Diptera : Culicidae : Culicinae). *Tech. Bull. Univ. Minn. agric. Exp. Sta.* **228** : 1154, 1958.

Darlington, P. J. *Zoogeography : the geographical distribution of animals.* 8vo. New York : Wiley, 1957.

Neuchâtel, Université. Institut de Zoologie. *First Symposium on host specificity among parasites of vertebrates.* 8vo. Neuchâtel, 1957.

In addition separates have been presented by Plant Protection Ltd. ; Dr. D. J. Lewis ; United States Department of Agriculture ; Chicago Natural History Museum ; Entomology Division, Department of Agriculture, Canada ; Dr. W. Büttiker ; Dr. E. T. Nielsen ; American Entomological Society ; Mr. E. B. Britton ; Professor G. C. Varley ; Dr. C. A. Edwards ; Mr. S. Sundararaman ; Mr. C. N. Smithers ; Director, E.A.T.R.O., Tororo ; Professor V. B. Wigglesworth ; Mr. T. E. Woodward and Dr. J. L. Cloudsley-Thompson.

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